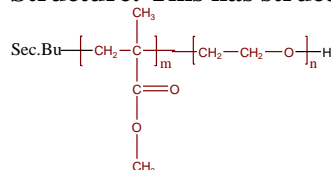Sample Name:
Poly (ethylene oxide-b-methylmethacylate)

Sample #: **P8065-EOMMA**

Structure: This has structure A
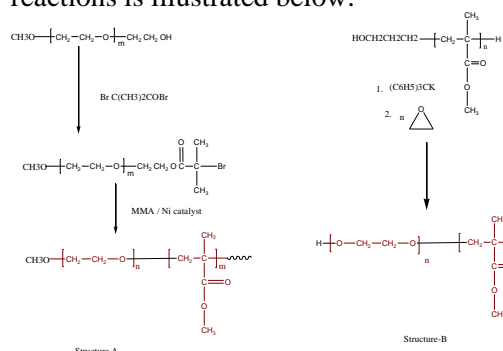

Composition:

Mn x 10^3 PEO-b-MMA	PDI
15.0-b-9.0	1.4

Synthesis Procedure:
Poly(methyl methacrylate -b- ethylene oxide) is prepared by different routes. The scheme of the reactions is illustrated below:
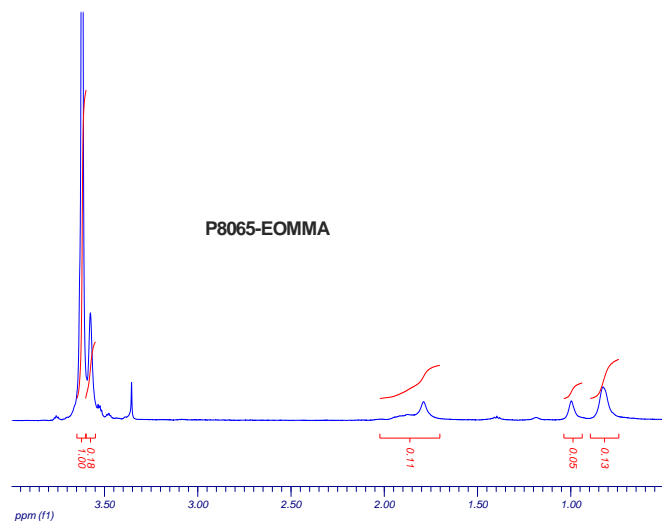

Purification of the polymer:
The non-reacting PEG from the synthesized polymer can be removed by stirring the polymer in hot water. The obtained polymer dissolved in CHCl₃/toluene and pass through the column packed with silica bed. The di-block copolymer obtained through second route where the macro-initiator of PEG bearing Br terminal group was used to initiate polymerization of the MMA. The obtained polymer solution in toluene/CHCl₃ was passed through a column packed with silica to remove the traces amount of Nickel catalyst. The polymer was further purified by stirring in hot water to remove un-reacted PEG macro-initiator and finally recovered by precipitation in cold ether/hexane mixture.
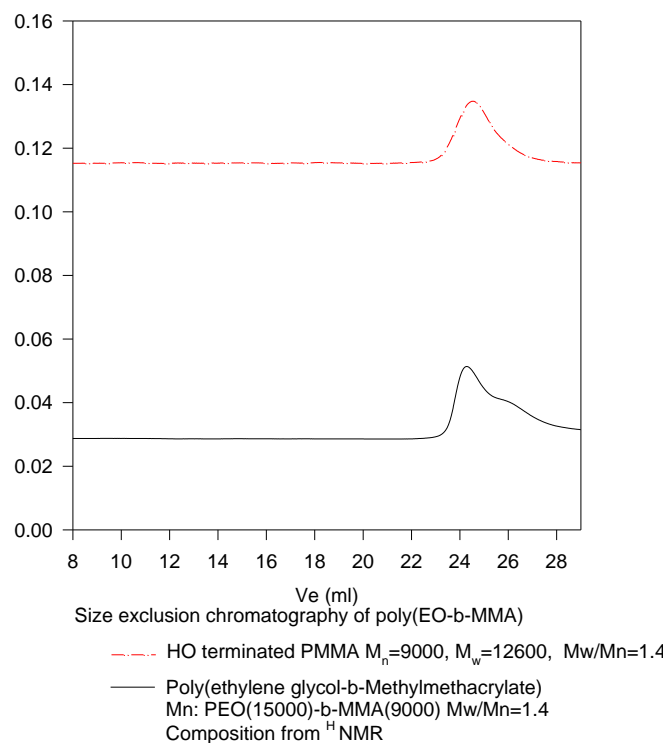
Solubility:
Poly(ethylene oxide -b- MMA) is soluble in CHCl3, THF, toluene. The polymer precipitated out from hexane.

¹H-NMR Spectrum of the block copolymer:

SEC of the block copolymer:

P8065-EOMMA

Ve (ml)
Size exclusion chromatography of poly(EO-b-MMA)

—·—·— HO terminated PMMA M_n=9000, M_w=12600, Mw/Mn=1.4

——— Poly(ethylene glycol-b-Methylmethacrylate)
Mn: PEO(15000)-b-MMA(9000) Mw/Mn=1.4
Composition from [H] NMR

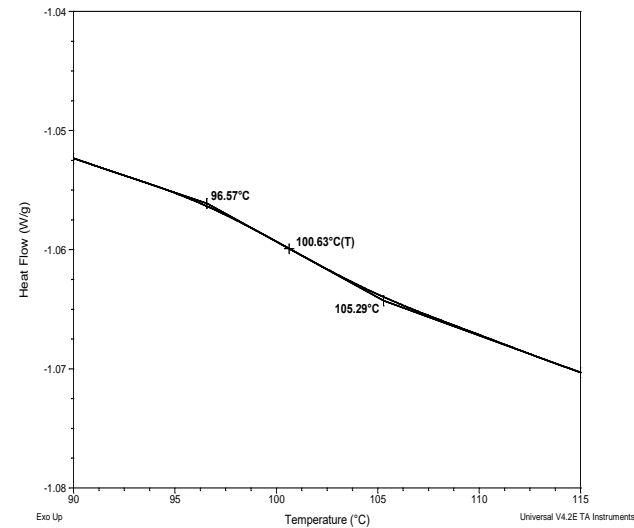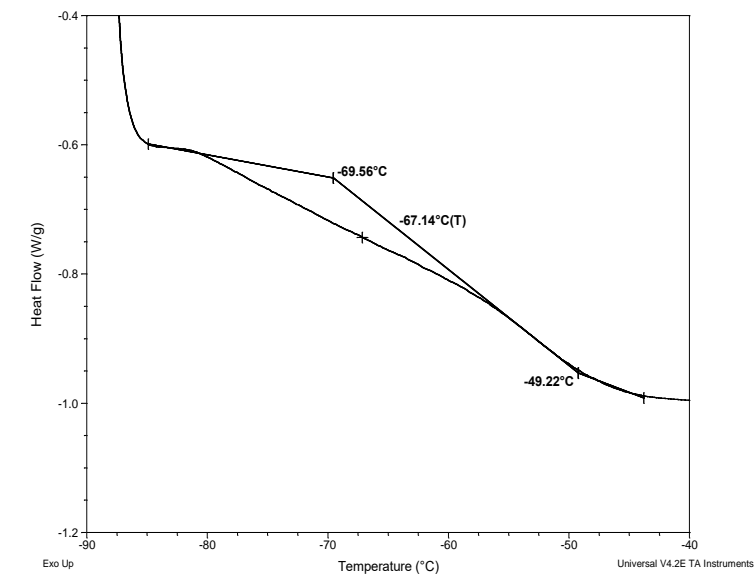## Thermal analysis of the sample# P8065-EOMMA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermal analysis results at a glance

For PMMA block		
T_g: 101°C	T_m: -	T_c: -
For PEO block		
T_g: -67 °C	T_m: 48°C	T_c: Not observed

Thermogram for the MMA block

Melting and crystallization curve for the sample

The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Melting curve for PEO block

Thermogram for the PEO block